

REMARKS

Upon entry of this amendment, claims 1-10, 12-22, 24-25, 33-45, 56-86 and 89, will be pending in the application. Claims 44 and 89 are being amended, and claims 87-88 are being canceled.

Applicant kindly thanks Examiner for the allowance of claims 1-10, 12-22, 24-25, 33-43, 57-59, 61-63, 65-67, 69-71, 73-75, 77-79 and 81-83.

Reconsideration of the present application is respectfully requested in view of the amendments and arguments made herein.

Objection Under 35 U.S.C. § 132(a)

The Examiner objected to the following language added to the Specification in the paragraph on page 8, lines 1-20, under 35 U.S.C. § 132(a) as new matter introduced into the disclosure of the invention: "The coil can have separate turns with each turn having a different radius..."

Applicant respectfully submits that the Specification and drawings fully disclose a coil having separate turns with each turn having a different radius. With respect to the drawings, as stated by the C.C.P.A.:

The practical, legitimate inquiry in each case of this kind is whether the drawing in fact discloses to one skilled in the art. Whatever it does disclose may be added to the specification in words without violation of the statute and rule which prohibit "new matter," 35 U.S.C. 132, Rule 118, for the simple reason that what is originally disclosed cannot be "new matter" within the meaning of this law. If the drawing, then, contains the necessary disclosure, it can "form the basis of a valid claim." In re Wolfensperger, 133 USPQ 537, 542 (C.C.P.A. 1962).

Applicant maintains that the added language to the Specification, "[t]he coil can have separate turns with each turn having a different radius..." merely describes that which is disclosed in text in the Specification and through illustration in FIGS. 1-5 of the drawings. Referring to FIGS. 2 and 4, it can be seen that the antenna coil 210 is shown to have a number of turns. FIG. 1, 3 and 5 also show a coil having multiple turns (round circles) positioned on the ceiling 106. FIGS. 2 and 4 further depict the multiple turns of the coil 210 which are shown as concentric to one another or converging. Further, as can be seen in the partial sectional diagrams of FIGS. 1, 3 and 5, and the perspective views of FIGS. 2 and 4, coil configurations having turns of a different radius are ascertainable and mathematically verifiable by one of ordinary skill in the art. The turns have different radii as the coil loops get progressively smaller.

Further, Applicant respectfully submits that the Specification refers to a coil configuration in both singular and plural forms. Specifically, page 8, lines 9-11 of the Specification describes a singular form of the coil in which "...a single length of a conductor (i.e., copper coil) is positioned at the circumference of the dome 106 and coiled radially inward." Further, the Specification describes plural forms of the coil, at least at page 2, lines 29-30, which teach that "[i]n situ etch depth monitoring is of particular interest in systems where plasma excitation coils are used"; and at page 10, lines 1-2, which state "[s]ince the monitoring assembly 121 is shielded and/or positioned away from the antenna coils, interference or RF power coupling is minimized." Thus, combining the teachings of the singular coil or a plurality of coils in the Specification with the drawings of FIGS. 1-5 that show a coil configuration having a number of different turns, would disclose to one of ordinary skill in the art, the language "the coil can have separate turns with each turn having a different radius...." Such turns can be the separate turns of a singular coil having a single length, or the separate turns of a plurality of coils. Thus, the Specification and drawings of FIGS. 1-5 clearly disclose the claimed language to one skilled in the art, and no new matter is being added by the amendment.

Rejection Under 35 U.S.C. § 112

The Examiner rejected claims 56, 60, 64, 68, 72, 76, 80 and 84 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement on grounds that the claims contain subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner states that there is "no disclosure pertaining to a multi-turn coil having separate turns, with each turn having a different radius."

[T]o comply with the description requirement of 35 U.S.C. 112, first paragraph....; all that is required is that the application reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the subject matter later claimed by him. Forssmann v. Matsuo, 23 USPQ 2d 1548, 1550 (B.P.A.I. 1992), aff'd, 991 F.2d 809 (Fed. Cir 1993).

The claim language referring to a "multi-turn antenna comprising a coil having separate turns, each turn having a different radius" is supported by the illustrations in originally filed FIGS. 1-5, as discussed above. Such illustrations reasonably convey to persons skilled in the relevant art that the inventors had possession of this aspect of the invention along with the entire invention as of the filing date of the original application. An antenna comprising a coil having multiple turns, or a "multi-turn antenna" is shown in the drawings of FIGS. 1-5. The separate turns can be of a single length of coil, or separate turns of a plurality of coils, as both the singular and plural form of coils is taught by the Specification. As would be apparent to one of ordinary skill in the art on examination of the drawings, the separate turns have different radii.

Therefore, claims 56, 60, 64, 68, 72, 76, 80 and 84, which contain the claim language “multi-turn antenna comprising a coil having separate turns, each turn having a different radius,” fully comply with the description requirement of 35 U.S.C. § 112, first paragraph.

Rejection Under 35 U.S.C. § 102(e)

The Examiner rejected claims 44-45 and 85-89 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,824,158 issued to Takeuchi et al., entitled “Chemical Vapor Deposition Using Inductively Coupled Plasma and System Therefor” (hereinafter, Takeuchi et al.).

Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. Scripps Clinic & Research Found. V. Genentech Inc., 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991).

Claim 44-45 and 85-86

Takeuchi et al. does not teach amended independent claim 44, which is to a method of processing a substrate in a chamber comprising a wall facing the substrate, the wall being at least partially covered by a multi-turn antenna, a cathode within the chamber and an RF power source. The method comprises providing a substrate in the chamber, introducing a gas into the chamber, applying an RF signal to the cathode and multi-turn antenna by powering the RF power source to form a plasma in the chamber, detecting radiation that propagates through the wall and evaluating the detected radiation to monitor the depth of a layer being processed on the substrate.

Instead, as illustrated in one embodiment, Takeuchi et al. teaches detecting radiation through a viewing port of a chamber having “an antenna formed in a loop...” (Takeuchi et al., col. 7, lines 30-31 and 65-66.) The singular form “a loop” would suggest a single loop as opposed to multiple loops and turns. Furthermore, Figures 7 and 8 of Takeuchi et al. both of which show the process monitoring device, also show that the antenna loop is a single-turn coil. Thus, Takeuchi et al. does not teach energizing the gas by applying an RF current through a multi-turn antenna and detecting radiation from directly above the surface of the substrate after the radiation propagates through the wall and the external surface of the process chamber, as claimed in claim 1. Therefore, Takeuchi et al. does not teach all of the elements and limitations of claim 44. Thus, Takeuchi et al. does not anticipate claim 44 and the claims dependent therefrom.

Claim 87 -88

Please note that claims 87-88 have been canceled.

Claim 89

Takeuchi et al. does not teach amended independent claim 89, which is to a method of processing a substrate in a chamber comprising a wall facing the substrate, the wall being at least partially covered by a multi-turn antenna, a cathode within the chamber and an RF power source. The method comprising providing a substrate in the chamber, introducing a gas into the chamber, applying an RF signal to the cathode and multi-turn antenna by powering the RF power source to form a plasma in the chamber; detecting radiation that propagates through the wall using a monitoring assembly abutting an external top surface of the wall of the chamber and evaluating the detected radiation to monitor the depth of a layer being processed on the substrate.

As previously discussed, instead of teaching the claimed method, Takeuchi et al. teaches detecting radiation through a viewing port of a chamber having “an antenna formed in a loop...” (Takeuchi et al., col. 7, lines 30-31 and 65-66.) The singular form “a loop” would suggest a single loop as opposed to the multiple loops and turns of a multi-turn antenna. Therefore, Takeuchi et al. does not teach all of the elements and limitations of claim 89. Thus, Takeuchi et al. does not anticipate independent claim 89.

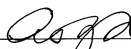
The above-discussed amendments are believed to place the present application in condition for allowance. Should the Examiner have any questions regarding the above remarks, the Examiner is requested to telephone Applicant's representative at the number listed below.

Respectfully submitted,

JANAH & ASSOCIATES
A PROFESSIONAL CORPORATION

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